ENVIRONMENTAL ASSESSMENT

FOR THE

USASATCOMA FACILITY

ENVIRONMENTAL ASSESSMENT FOR THE USASATCOMA FACILITY

Finding of No Significant Impact

1. The US Army Communications - Electronics Command (CECOM), a Major Subordinate Command of the US Army Material Command (AMC) has prepared an environmental assessment prior to the construction of an expanded mission to the present satellite communication test facility building (SATCOM).

2. This project is required to provide the US Army Communications - Electronics Command (CECOM), Fort Monmouth, with an appropriately positioned, environmentally controlled, electromagnetic frequency shielded facility for the development, test, evaluation, and simulation of satellite communications devices and for training of defense communication agency controllers. The mission is that assigned by the defense communications agency in support of the defense satellite communications system.

3. The Environmental Assessment, documents the environmental, safety, and DOD mission considerations of the proposed action as well as of the potential alternative sites/actions.

4. Evaluation of the proposed action has not been identified any environmental sensitivity of the proposed site which would result in significant degradation of the human environment at the proposed site by the taking of the proposed action.

Alternative sites/actions which had been considered in the assessment were found to lack the necessary features required for anticipated DOD missions.

5. The Environmental Assessment provides the basis for the conclusion that the proposed action is not expected to result in a significant adverse impact on the human environment, nor is it expected to be environmentally controversial. Army policy requires environmental evaluations as a prerequisite to military construction and new weapon systems development, serving to insure that national environmental goals are attained.

EB Jun 89 (6/8/89)
DATE

DINKERRAI DESAI
Environmental Officer

7 Jul 89
DATE

JOHN L. BOOTH
LTC, EN
Dir, Engr & Hsg

Introduction

The environmental assessment has been prepared as part of an application process for a construction project. On January 1, 1970, the National Environmental Policy Act (NEPA) became Public Law to insure that environmental values will receive proper placement among technical priorities. As a result, this environmental assessment has been structured to comply with the requirements of NEPA.

HISTORY OF SATCOMA PROPOSED USAGE

1.0 General Description of Facility

The US Army Satellite Communications Agency (USASATCOMA) was established by a general order of the Secretary of the Army on 15 August 1962. In addition, the current project manager for Satellite Communications is dated 6 September 1978 and designated the local SATCOMA Commander as Department of the Army Project Manager (PM) for satellite communications. Subsequent reorganization relegated SATCOMA from a DARCOM PM to a product/project manager element of the US Army Communications - Electronics Command (CECOM), a major subordinate command of the US Army Materiel Command (AMC).

USASATCOMA and PM SATCOM are responsible for the research, development, acquisition, and life cycle support of satellite communications' ground equipment for the Department of Defense (DOD) military satellite programs as follows:

- Defense Satellite Communications System - Defense Communication System (DSCS-DCS)
- Tactical Satellite Communications System, Ground Mobile Forces (TACSATCOM-GMF)
- Navigation Satellite Tracking and Ranging Program/Global Positioning System (NAVSTAR/GPS)

1.1 Description of Proposed Facility

The proposed project will be a permanent, fire resistant two story 22,000 square foot building with appended reception lobby to serve a satellite communications test and training laboratory complete with utilities, sprinkler, and smoke detection system, storm, drainage, sidewalks, (parking and roads not required), and site improvement. Building may be masonry or pre-engineered steel as economically frudent and will include requisite radio frequency shielding and grounding systems. Heat will be provided by individual oil-fired plant.

1.2 Description of Present Facilities

The present satellite communication test facility buildings (7,200 square feet) is of insufficient size and cannot provide the electrical power needed to support the additional equipment resulting from the new mission; further, it has inadequate electromagnetic shielding for the new generation type equipment.

The present test facility, Building 209, is not only of insufficient size to

accommodate the new mission, but also lacks

a) Radio frequency shielding

b) Features for storage of sensitive materials

c) Requisite electric power

d) Room for requisite engineering and training personnel.

1.3 Description of Proposed Construction

The building total size is anticipated at a nominal 22,000 gross square feet in a two story configuration with a single story reception lobby appended. The choice of building material, concrete masonry units or pre-engineered steel, is a design option although it is an opinion that pre-engineered steel would prove more conductive to required grounding and shielding.

The lower floor will consist of a large, computer-type area, a related software development center, maintenance, and supply area, toilets, stairwell, elevator vault, and a mechanical equipment room. The computer area, software development center, and maintenance/supply area will be on pedestal flooring with underfloor conditioned air delivery; other areas will be slab on grade with appropriate floor surfacing material.

The upper floor will be devoted to engineering space with minimal administrative support, a conference area and classrooms for both lecture and for "hands-on" training.

The computer-type area and adjacent areas housing similar equipment must be presented radio frequency/electromagnetic shielding complete with grounding. The shielding will consist of continuously welded, metal-faced panels forming a cube around the area of concern. Facility and technical ground systems must be designed and installed in accordance with MIL-STD 188-124.

The vault will be designed and constructed in accord with applicable security regulations.

Current Environmental Conditions

2.0 Present Land Use Prior to Implementation of Project

The present land use is shown on attached map and defined in Table 1.

The SATCOM facility is located at the Main Post, Building 209 in an area used for support adminimstration, training, and housing. The existing facility of 7,200 square feet provides for the development, testing, evaluation, and simulation of satellite communication devices and for training Defense Communication Agency personnel. Present conditions can only support a portion of the mentioned equipment and facilities lack essential electro-magnetic shielding and grounding. Equipment items are shuttled in and out of the facility resulting in frequent costly delays. (see table one for summary of land use relationships)

2.1 Soils and Topography

The soils of Monmouth County range from fertile dry soils to droughty infertile

soils with little humus and organic materials present. In Monmouth County, the Soil Conservation Service (SCS) recognizes 43 series of soil represented by 144 types of subtypes. The Main Post have been classified as "sandy loom"; the soil is slightly acidic in nature as determined by Rutgers University, College of Agriculture and Science.

2.2 Sewerage Disposal

Sewage collected from the Main Post flows to the Northeast Monmouth County Regional Sewerage Authority Treatment Plant located in Monmouth Beach on the Shrewsbury River. Fort Monmouth eliminated its sewage treatment plant in 1981.

2.3 Water Supply

The Fort Monmouth water systems, including the Fort Monmouth Main Post system and Camp Charles Wood system, consist of a total of seven interconnections with N.J. American Water Company, five of which are presently active; three water storage tanks with a total capacity of 1.0 million gallons; five high service booster pumps; supplementary chemical feed facilities; and separate distribution systems consisting of a total of approximately 30 miles of water mains, fire hydrants, meters, service connections, and valves. The Fort Monmouth water systems service the entire Fort Monmouth Main Post and Camp Charles Wood areas.

Both the Main Post and Camp Charles Wood areas obtain water from a private purveyor, N.J. American Water Company.

The water supply servicing the Fort Monmouth study area is obtained principally from the 2.6 billion gallon Swimming River Reservoir through the 36.0 million gallon per day Swimming River treatment plant located in Colts Neck Township.

2.4 Topography

Topography at the Main Post is generally level land. Elevations above sea level range from 5 to 34 feet. The natural vegetation of Fort Monmouth is scrubby-oak, pine, locust, huckleberries, and ferns. Reeds, sedges, and marsh grasses are along the banks of the Oceanport and Parkers Creeks.

2.5 Surface Drainage, Geology, and Ground Water

The Main Post is drained by Mill Brook along the southwest boundary and runs into Lafetra Brook. Lafetra Brook originates off post, and with Parker's Creek, forms the northern boundary to the Main Post. Parker's Creek originates at the confluence of Lafetra and Mill Brooks and flows along the northern boundary at Fort Monmouth until it discharges into the Shrewsbury River.

The southern half of the Main Post is drained by Husky Brook, a fresh water stream which runs into Oceanport Creek. Oceanport Creek is a tidal stream emptying into Shrewsbury River.

The major aquifers in Monmouth County are the Raritan-Magothy and the Englishtown Formations. The Mount Laurel-Wenonak and Red Bank are the main aquifers locally important in the Fort Monmouth Area.

The formations dip to the southeast at an average rate of 35 per mile. Weathered bed rock is approximately 900 feet below the surface at Fort Monmouth and slopes downward to the southeast.

The aquifer formations are separated by aquiclude formations. The major aquicludes in the vicinity of Fort Monmouth are: the Merchantville Formation and the Woodbury Clay, the Marshalltown Formation and the Hornerstown Formation. The Navesink Formation is an aquiclude except in the shell zone. The aquicludes eliminate or greatly diminish the vertical flow of groundwater from one aquifer to another. Groundwater occurs under water table or artesian conditions. In Monmouth County, most of the groundwater has been taken from artesian aquifers. The Raritan-Magothy, Englishtown, and Wenonak and Mount Laurel Sand Formations are artesian in the vicinity of Fort Monmouth.

Water table aquifers contain ground water which is under atmospheric pressure at the top of the saturated portion. Private home owners not served by public water supply systems frequently utilize these aquifers. The Red Bank Sand Formation is a water table aquifer in the vicinity of Fort Monmouth.

2.6 Utilities/Energy

Jersey Central Power and Light provides electric service to the Main Post at 34,500 volts (34.5 KV), 3-phase, with cables on wood poles to a government-owned switching station on Main Post.

The New Jersey Natural Gas Company provides gas service.

The predominant fuel used for heating is fuel oil. The grades are No. 6 at large boiler plants and No. 2 fuel oil.

The Monmouth County Regional Sewerage Authority provides service to the Main Post.

2.7 Historical Preservation

There are no historical sites within the project area.

2.8 Air Quality

Since all heating units have input ratings less than 250 MBTU/HR and do not fall under Federal Regulations, there are no anticipated primary or secondary long term impacts upon air quality as a result of the proposed project.

2.9 Storm Water Drainage

Two natural drainage systems, Parkers Creek and Husky Brook, flowing west to east, convey the storm water runoff from the Main Post. An extensive storm drain

system built 50 years ago supplements the natural drainage to prevent local flooding conditions. The 100 year flood plain intersects the project site at an elevation of 9.18 feet.

3.0 Probable Future Environment Without Project Implementation

A non-implementation will have no effect on water supply, utilities, drainage, sewerage, and air pollution systems.

Future Environmental Conditions

4.0 Probable Environmental Impact if Project is Implemented

4.1 Air Quality

Air emissions from Building 209 will result only from the intermittent operation of a new, high efficiency heating unit having a maximum rated consumption of nineteen gallons per hour of No. 2 fuel oil. This would translate, for example, into a peak emission rate of 1.52 pounds per hour of NOx, a negligible amount. Moveover, this new facility will substantially reduce the current requirements of older, less efficient heating units, in existing facilities.

4.2 Water Supply

Implementation of this project will have no impact on the water supply in terms of quantity or quality. Since there will be no increase in the population for this facility, the water demand per capita will remain the same.

The base water supply system is adequate to support this and other needed construction. The existing base main is approximately 320 feet from the proposed building site.

4.3 Surface Water Hydrology

There are no anticipated primary or secondary long term impacts upon surface water hydrology. The short term impacts due to construction activity are discussed in Section 4.

4.4 Sewage Disposal

There are no anticipated primary or secondary long term impacts on sewage disposal, since there will be no increase in population for this facility.

This system is considered adequate for this other construction. A lift station is included in the contruction estimate to assure a complete and usable facility. Fort Monmouth has a base collection system that confluences into a north Monmouth County Sewerage District trunk.

4.5 Utilities/Energy

The proposed facility will further investigations into satellite communications techniques and will also serve as a training asset for the various operational and maintenance skills associated with the systems, notably that of earth station terminal operations.

A dish-antenna (earth station equipment) now exists at the site and consequently

is a consideration of the proposed construction, nor of this energy requirements appraisal.

In essence, the facility will contain principally communications, computer, and computer display equipment, occupying approximately 65% of the floor space with the remainder in training and related functions. In the 35% remainder of the space, there will be random instances of equipment (training displays, hands on experience, etc.), but those elements of lead are ignored, since the density will not be significant. For electrical and air conditioning requirements, an empirical heat equivalent load for computer space is taken at 141 BTUH/SF.

Personnel occupancy will be quite varied as the training sessions will include both lecture-demonstrations and visits to the earth station terminals exterior of the building. To the estimated 75 staff, a figure of 50 additional is utilized - this based upon a class load of 75, with 2/3 of the total time spent in the building itself.

This project will not increase demand on energy in areas other than electric, as a sizeable personnel increase will not take place; the increase in personnel served will be students - the activity personnel will remain the same, but relocate.

Development of sophisticated communications equipment, coupled with its supporting array of computers, and ensuing necessity for a controlled environment, forces an increase in electrical demand and usage.

Stringent conservation attention by supervisory personnel has reduced the overall heat equivalent (equated to all energies) at this installation by as much as 25%, based upon a 1975 figure. This emphasis will continue in the proposed structure and its operation.

Electrical power for this project will be furnished from the Main Post switching station, now connected to 2 - 5000 KVA, 34.5 KB to 4.16 KV transformers.

The probable heating consumption for heating oil is 15,599 gallons or .76 gallons/SF/YR.

Fort Monmouth and subposts 1981 Red Book has a fuel heating equivalent of 795,943 MB to heat 5,370,000 SF of building space per year. This is 1.06 gallons of fuel oil/SF. The estimate above compares favorably.

4.6 Underground Storage Tanks

All underground storage tanks will have secondary containment.

4.7 Historical Preservation

This project has been reviewed for impact on historical and archeological properties and complies with the National Historic Preservation Act (Public Law 89-665), as amended.

The proposed construction is neither at, nor in the vicinity of a historic site in, or nominated for a register of local, state, or federal historic places.

4.8 Flood Plains

The proposed project is a two story addition to an existing test facility in

an area already being used for administrative purposes. The only commitment of land resources is construction of approximately 5,000 square feet of land space.

The project, as mentioned before, lies within the 100 year flood plain. All structures should be elevated so that the lowest floor, including any basement, is at least a minimum of one foot above the 100 year flood level to prevent flood damage. Since the area is near to sea level, heavy rains during high tide can cause flooding. However, past records indicate that when flooding occurs, there has been no permanent property damage. The level for the first floor will be established at 10.1 feet to avoid flooding.

4.9 Radio Frequency

The shielding to be installed on the proposed building will effectively contain spurious radio frequency emissions well below the level of that permitted for Citizens' Band (CB) Radio transmission.

Economics

5.0 Economic Justification

The assignment of this mission to the satellite communications agency is specifically directed by the Defense Communications Agency (DOD) to support and develop systems and philosophies for the three services as well as participating allied nations. In directing this requirement to be an "in-house" accomplishment, that, with the lack of other available alternate facilities at Fort Monmouth, precludes any choice of trade-offs and thus makes an economic comparison infeasible.

For lack of alternative approaches, the benefits to be gained from the analysis are not work the minimal effort to be gained in the preparation.

6.0 Alternatives

The development, test, and evaluation of satellite communications systems equipment cannot be fully exploited without proximity to an earth station such as exists at Fort Monmouth. Non-realization of this project will deviate the potential to sustain present vital defense technological lead in the international arena. This facility is essential to the attainment of an adequate communications-warning posture in the event of mobilization.

6.1 Construction of Facilities at an Alternate Site

No existing facilities either at Fort Monmouth Main Post or subposts, permanent or temporary, can be made to satisfy the requirements of an intergrated test facility (ITF) or related software development facility (RSDF).

The above is reinforced by the fact that the proposed test building must be proximate to the earth terminals in order to integrate and eliminate extensive shielded cabling and attendant (often disconcerting) amplification/filtration requirements.

Primary Environmental Impacts

The primary environmental impact of the proposed project will be short term land

disturbances due to construction.

7.0 Soil Erosion

Potential soil erosion, which could result from construction activities can be minimized by observing certain mitigating procedures during construction operation: All areas which require cleaning should be graded, top soiled, limed, and fertilized, seeded, and mulched.

7.1 Surface Water Hydrology

Short term degradation of water quality should be minimized by ensuring that proper construction techniques are utilized to reduce sediment entering a storm drain or water body. There should be strict compliance with "Standards for Soil Erosion and Sediment Control in New Jersey", by the New Jersey State Soil Conservation Service, 1974.

7.2 Noise Control

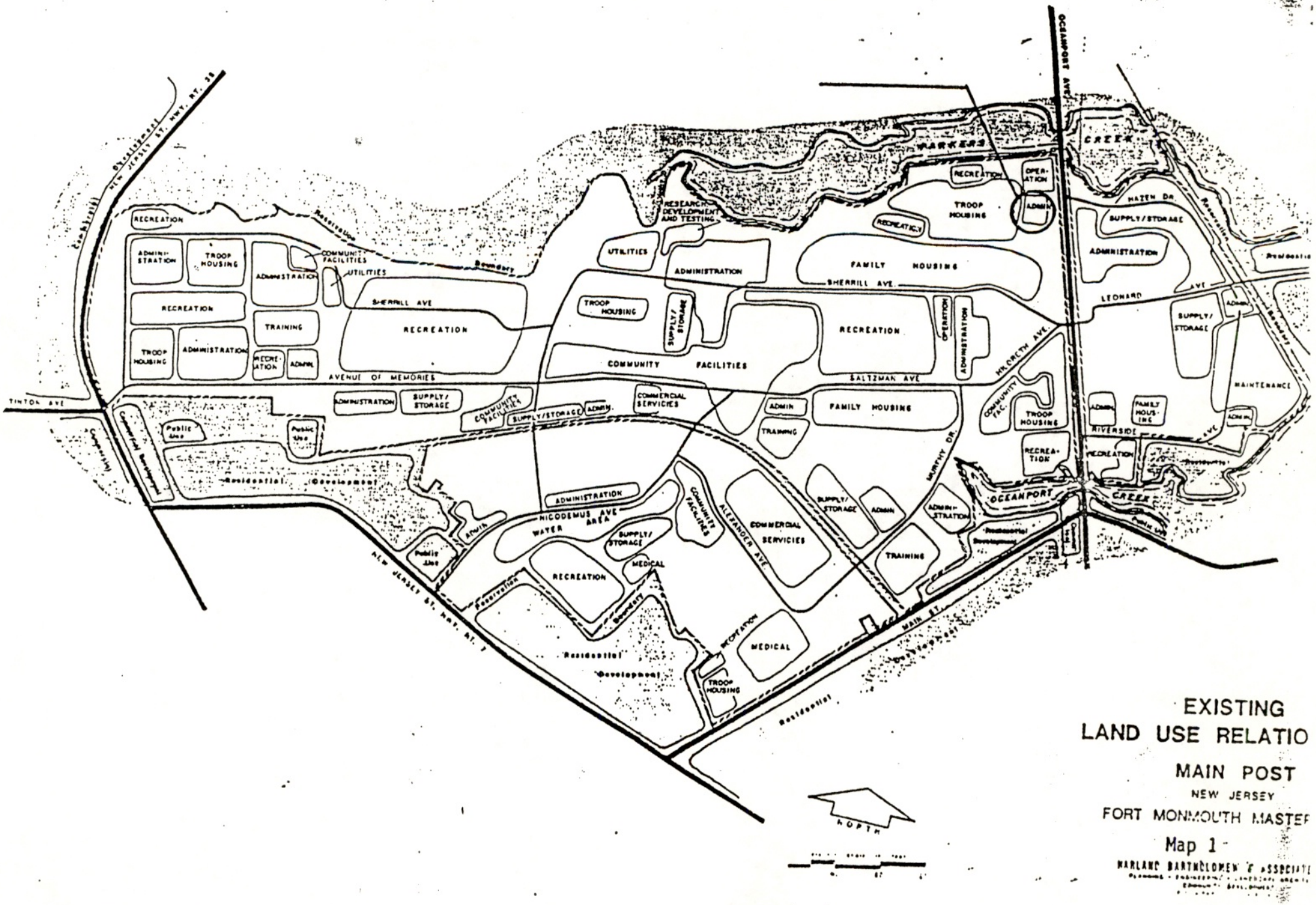
There will be anticipated short term inconvenience as a result of increased noise levels during construction. This amount of noise generated can be limited by restricting the number of machines in operation at the site to only those required. Those machines in operation should be equipped with mufflers.

7.3 Traffic Control

There will be temporary disruption of the normal flow of traffic as a result of the project. This is expected to be a localized problem occuring only during construction. The contractor should be required to maintain passable street and walks. The contractor should be required to review his construction schedule with appropriate agencies in order to minimize traffic disruption.

7.4 Dust Control

The excavation and backfill operations are expected to produce limited amounts of dust. There is temporary degradation of air quality and a temporary inconvenience to local residents. Dust control measures will be of principle concern in the residential area of the project site. Daily sweeping and wetting down of the site will minimize dust formation. Trucks on site with earthen materials or loose debris should have suitable covers fastened or be loaded in such a way to prevent dust formation.



EXISTING LAND USE RELATIO

MAIN POST

NEW JERSEY

FORT MONMOUTH MASTEF

Map 1

MARLAND BARTHOLOMEW & ASSOCIATE

Table 1

Land Use

MAIN POST

Land Use Category	Approximate Area (Acres)	Percent of Tota Area
Family Housing	33	5
Troop Housing	31	5
Commercial Services	14	2
Community Facilities	37	6
Medical	7	1
Recreation	80	13
Open Space (including lake)	304	49
Administration	52	8
Training and Operations	10	2
Research, Development and Testing	2	NA
Supply/Storage	38	6
Maintenance	13	2
Utilities	9	1
TOTAL	630	100

CHARLES WOOD AREA

Family Housing	125	24
Community Facilities	3	1
Recreation	149	29
Open Space (including marsh area)	190	37
Administration	8	2
Operations (Heliport)	1	NA
Research, Development and Testing	27	5
Supply/Storage	8	2
Maintenance	NA	NA
Utilities	NA	NA
TOTAL	511	100

EVANS AREA

Family Housing	4	2
Community Facilities	NA	NA
Open Space	46	21
Administration	4	2
Research, Development and Testing	156	72
Supply/Storage	4	2
Utilities	NA	1
Leased Area	1	NA
TOTAL	215	100

Source: Harland Bartholomew & Associates, Inc.